

H11537

NOAA FORM 76-35A  
U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
NATIONAL OCEAN SERVICE

## DESCRIPTIVE REPORT

Type of Survey: Hydrographic Multibeam & 200% Sidescan

Field No. : Sheet B

Registry No. : H11537

## LOCALITY

State: Louisiana

General Locality: Gulf of Mexico

Sublocality: Offshore - 11nm SE of Belle Pass

2006-2007

CHIEFS OF PARTY  
Scott Croft, Joseph Burke

## LIBRARY & ARCHIVES

DATE: \_\_\_\_\_



NOAA FORM 77-28 (11-72) <div style="text-align: center; margin-top: 10px;">           U.S. DEPARTMENT OF COMMERCE            NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  <b>HYDROGRAPHIC TITLE SHEET</b> </div>	REGISTRY NUMBER:  <div style="text-align: center; font-size: 1.2em;">H11537</div>
	FIELD NUMBER:      Sheet B

State: Louisiana

General Locality: Gulf of Mexico

Locality: Offshore - 11nm SE of Belle Pass

Scale: 1:40,000      Date of Survey: September 2006 to January 2007

Instructions Dated: February 7, 2006      Project Number: OPR-K362-KR-06

Vessels: M/V Brooks McCall

Chiefs of Party: Scott Croft, Joseph Burke

Surveyed by: Scott Croft, J. Burke, Dave Aymond, John Baker, Tara Levy, Bill Carlon, Leslie Tomlinson

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Soundings taken by echosounder, hand lead line, or pole: Simrad EM3002 Multibeam Echosounder

Graphic record scaled by: N/A

Graphic record checked by: N/A

Protracted by: N/A      Automated plot by: HP 1055 Plotter

Verification by: C&C Technologies Personnel

Soundings in: Feet:   X   Fathoms:        Meters:        at MLW:        MLLW:   X  

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**Remarks:** Multibeam Hydrographic Survey of Sheet B  
Data collection in meters, referenced to MLLW, later converted into feet  
200% side scan sonar coverage  
UTC time was used exclusively  
Grab samples were taken  
Tidal Zones: CGM227, CGM228, CGM229, CGM230, CGM364, CGM369, CGM372  
Tidal Station: 8762075



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## **APPENDICES**

Appendix I	Danger to Navigation Reports
Appendix II	List of Geographic Names
Appendix III	Progress Sketch
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Appendix V	Supplemental Survey Records and Correspondence

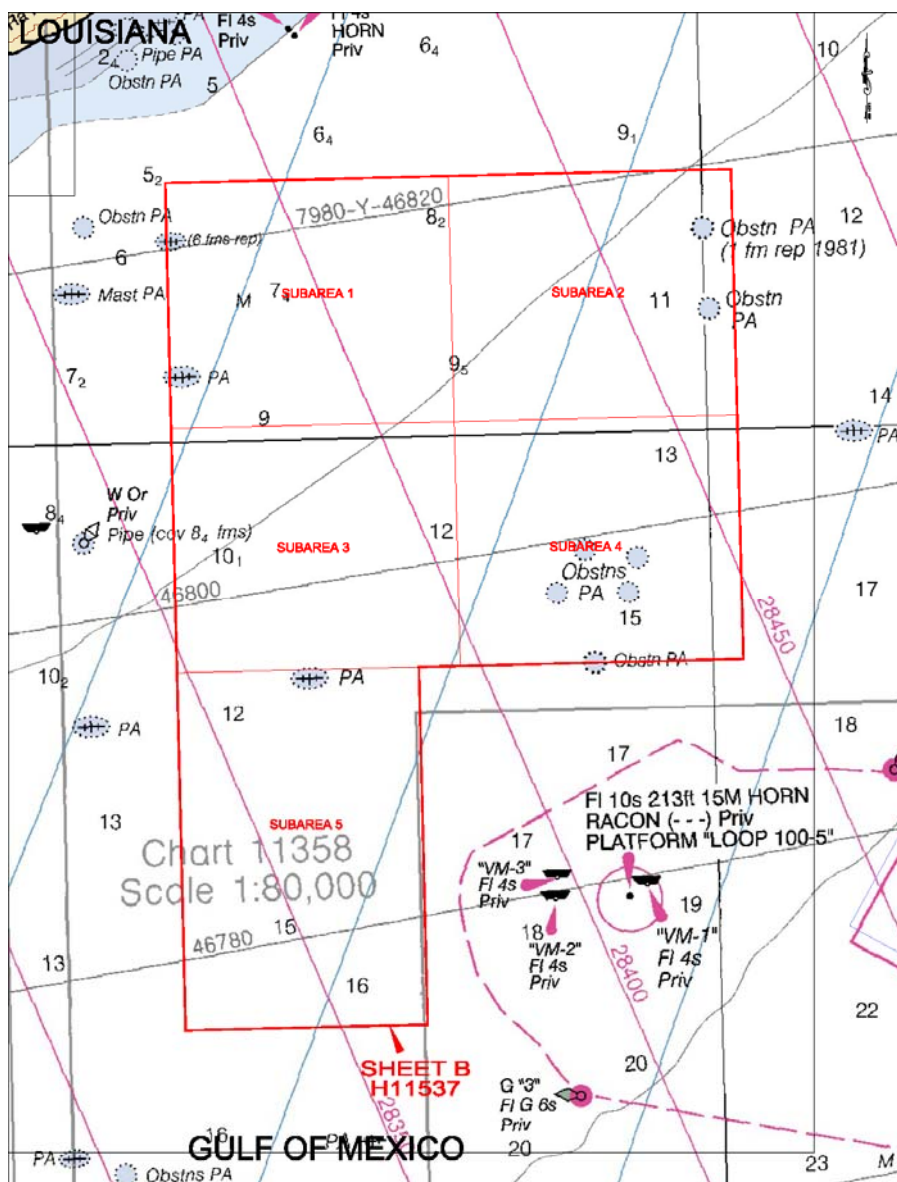
## **SEPARATES**

Separates I	Acquisition and Processing Logs
Separates II	Sonar Contact Table Side Scan Data Reproductions Correlator Sheets
Separates III	Sound Velocity Profile Data
Separates IV	Statement of Work
Separates V	Crossline Comparisons





The survey area is located south of Port Fourchon, Louisiana in the Gulf of Mexico. The sketch on the following page shows the layout of the Project (OPR-K362-KR) and Sheet B (H11537). Water depths in the survey area range from 40 feet to 108 feet Mean Lower Low Water (MLLW).

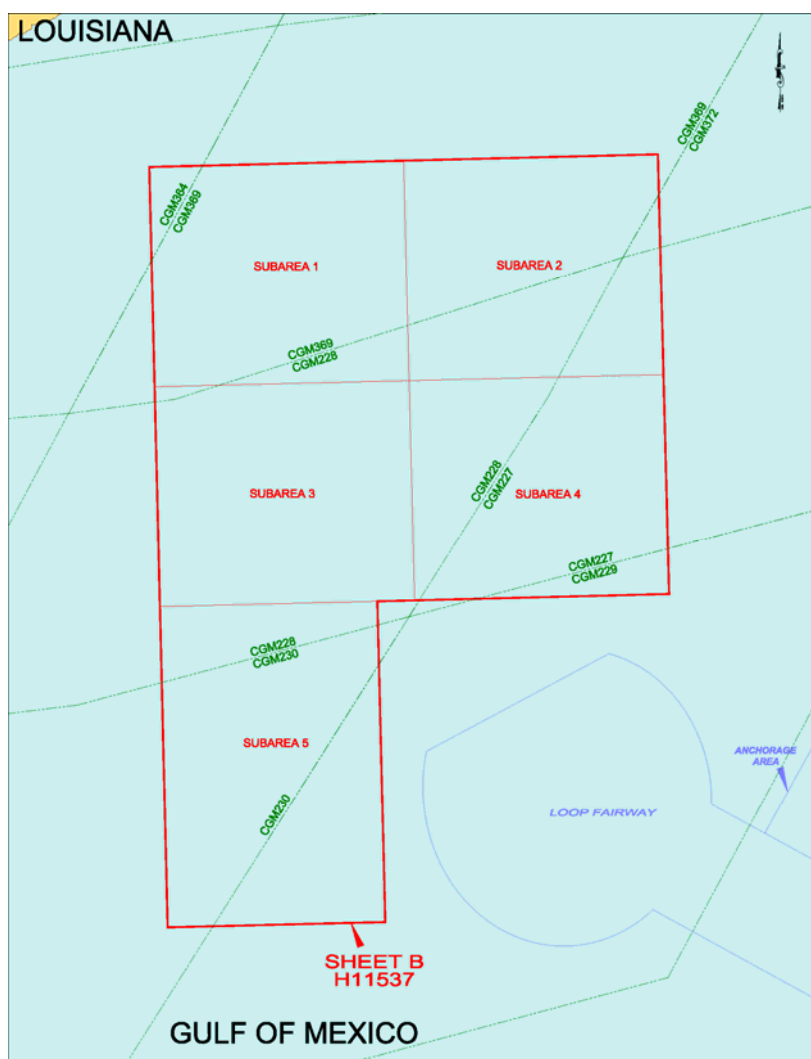




## Descriptive Report to Accompany Hydrographic Survey H11537



The survey area was broken down into five sub-areas to allow for more efficient data processing and data management. The sub-areas were defined based on the predicted data set sizes prior to survey commencement. Subarea 1 is split by tidal zones CGM228 and CGM369, and CGM364. Subarea 2 is split by tidal zones CGM227, CGM228, CGM369, and CGM369. Subarea 3 is split by tidal zones CGM228 and CGM369. Subarea 4 is split by tidal zones CGM227, CGM228, and CGM229. Subarea 5 is split by tidal zones CGM228, CGM229, and CGM230. Tidal data from the Port Fourchon tide station (8762075) was used to process all of the tidal data. A sketch showing the layout of the tidal zones and subareas is shown on page 3.





## B. DATA ACQUISITION AND PROCESSING *See also the Evaluation Report.*

### B.1 EQUIPMENT

System	Manufacturer	Model
Multibeam Sonar	Simrad	EM3002
Side Scan Sonar	Klein	5000
Single Beam Sonar	Echotrac (Moana)	3200
Motion Sensor	CODA	F180
Primary Positioning System	CNAV	2050
Secondary Positioning System	CNAV	2050
Tertiary Positioning System	CODA	F180
Sound Speed at Transducer	Endeco	YSI
Sound Velocity Profiler	Seabird	SBE19

See *\*Data Acquisition and Processing Report* for a detailed description of the equipment used for hydrographic operations.

#### *Survey Vessel*

The S/V *Brooks McCall*, a 144-foot vessel, was used as the platform for all hydrographic operations. The vessel is 40 feet wide, with an approximate draft of 13 feet. A central reference point was established prior to the survey from which all relevant offsets were measured. The relevant offsets are presented in the following table where X is positive forward, Y is positive starboard, and Z is positive down.

	EM3002 Head	Side Scan Sonar Towpoint	Port F180 Antenna	Starboard F180 Antenna
X Offset	-0.721m	-28.392m	-0.692m	-0.692m
Y Offset	1.397m	1.771m	0.748m	2.052m
Z Offset	1.667m	-3.1m	-10.562m	-10.562m

Detailed vessel diagrams and patch test results are presented in the *\*Data Acquisition and Processing Report*. *\*Data filed with original field records.*





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## B.2 QUALITY CONTROL *See also the Evaluation Report.*

In order to most efficiently carry out this survey, the survey lines were oriented roughly east-west throughout the survey area. The line spacing was set at 90 meters based on the criteria of 200 percent side scan coverage using Technique 1 as set forth in Section 6.1 of the “Specifications and Deliverables” \* document for the majority of the survey. In the shallower water of subareas 1 (approximately 30 – 50 feet deep), the line spacing was tightened to 65 meters. The side scan sonar was operated at a 100 meter per channel range except for investigation lines where the range was typically reduced to 50 meters. The angular sector on the multibeam was set so that the criterion of two times water depth, as well as all accuracy, resolution, and detection criteria as set forth in Sections 5.2 and 5.3 of the “Specifications and Deliverables” \* document, were met.

The internal consistency of the multibeam depth values is quantified in the cross line statistics that were performed at the end of each main line. Cross lines were run prior to the collection of main line data so that quality control statistics could be performed on the data after each line. Based on pre-plot calculations, the total cross line miles was 90 nm, while the total main line miles was 1795 nm. The cross lines comprised about 5% of the total data set as compared to the main scheme lines. Rerun line miles are not included in these totals. As can be seen in the sample statistics found in Separates V\*, the main lines and cross lines depth values showed very good agreement. Each main line was compared to all cross lines for which there was overlapping data. The graphs shown in Separates V\* are a random sample of the graphs that were produced. The graphs show the mean difference, RMS difference, and confidence interval for each beam. The results show that the multibeam data was repeatable with 90% of the soundings within about 8 to 14 centimeters across the swath.

*\*Data filed with original field records.*





Multibeam quality control procedures are outlined in Section B.1 of the accompanying Data Acquisition and Processing Report. \*

Sheet B (H11537) adjoins with Sheet A (H11457), which was submitted in August of 2007.

### B.3 CORRECTIONS TO ECHO SOUNDINGS

No deviations from the Correction to Echo Soundings section in the Data Acquisition and Processing Report\* occurred.

## C. VERTICAL AND HORIZONTAL CONTROL

Tide and water level corrections were determined and applied in accordance with Attachment #7 of the Statement of Work. Data from the Port Fourchon, LA (8762075) tidal station was used. Tidal zoning as set forth in the Statement of Work was applied. The following table shows the tidal zone and correctors that were used for this sheet. Tidal data were processed using the 1983-01 epoch.

Tide Zone	Reference Station	Time Corrector (min)	Range Ratio
CGM230	8762075	-36	1.03
CGM231	8762075	-36	1.03
CGM234	8762075	-24	1.07
CGM235	8762075	-30	1.07
CGM236	8762075	-36	1.07
CGM247	8762075	-18	1.07
CGM250	8762075	-12	1.07
CGM251	8762075	-6	1.11

The horizontal datum for the survey is the North American Datum of 1983 (NAD 83). *See also the Evaluation Report.* The projection is Universal Transverse Mercator (UTM) Zone 15 North. The vertical datum for the soundings is Mean Lower Low Water (MLLW). *Approved tides were applied during field processing.*

*\*Data filed with original field records.*



## D. RESULTS AND RECOMMENDATIONS *See also the Evaluation Report.*

### D.1 CHART COMPARISON

#### D.1.1 CHARTS AND NOTICES TO MARINERS

The following charts were used for comparison purposes.

Chart Number	Scale	Edition	Edition Date
11340	1:458,596	70	August 2005
11366	1:250,000	9	March 2005
11358	1:80,000	53	November 2004

The Local Notices to Mariners were reviewed through Notice Number 10/07 dated March 7, 2007. During that time, five notice to mariners was issued for the charted area within the survey bounds.

In LNM 39/06 8<sup>th</sup> district, an add Obstrn PA at position ~~28.94863889°N, 90.11272222°W~~ **28 56'55.10"N, 90 06'45.80"W** on charts 11346 and 11358 was issued. The position of this new obstrn was confirmed by this survey. This obstruction is further discussed as investigation 3contact14 in section D.1.5 of this report. *Concur See D.1.5 for final charting recommendations.*

In LNM 39/06 8<sup>th</sup> district, an add Well (cov 15 fms) and an add Wor Fl 2.5s Priv at position ~~28.95933972°N, 90.01886472°W~~ **28 57'33.62"N, 90 01'07.92"W** on charts 11346 and 11358 was issued. This notice was later followed in LNM 10/07 8<sup>th</sup> district with an add PLATFORM at position ~~28.95933583°N, 90.01886583°W~~ **28 57'33.61"N, 90 01'07.92"W**. The position of this new well/platform was confirmed by this survey.

In LNM 39/06 8<sup>th</sup> district, an add Obstrn PA at position ~~28.96469444°N, 90.07719444°W~~ **28 57'52.89"N, 90 04'37.89"W** on charts 11346 and 11358 was



issued. The position of this new obstn was confirmed by this survey. This obstruction is further discussed as contact 3contact12 in section D.1.5 of this report. **Concur See D.1.5 for final charting recommendations.**

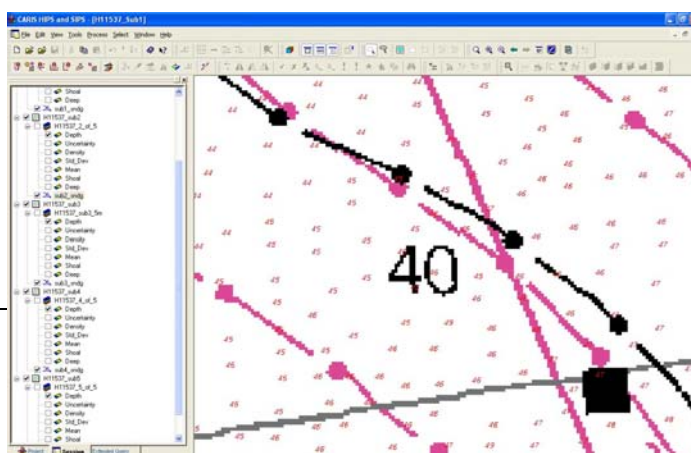
In LNM 39/06 8<sup>th</sup> district, an add Obstn PA at position ~~29.02158333°N~~, **29°01'17.69"N**, ~~90.13952778°W~~ **90°08'22.30"W** on charts 11346 and 11358 was issued. The position of this new obstn was confirmed by this survey. This obstruction is further discussed as investigation 1contact4 in section D.1.5 of this report. **Concur See D.1.5 for final charting recommendations.**

In LNM 51/06 8<sup>th</sup> district, an add Platform at position ~~28.96078306°N~~, **28°57'38.82"N**, ~~90.02344667°W~~ **90°01'24.41"W** on charts 11346 and 11358 was issued. The position of this new platform was confirmed by this survey. **Concur Chart platform in Lat 28°57'38.82"N, Lon 90°01'24.41"W.**

## D.1.2 CHARTED SOUNDINGS

### 11358

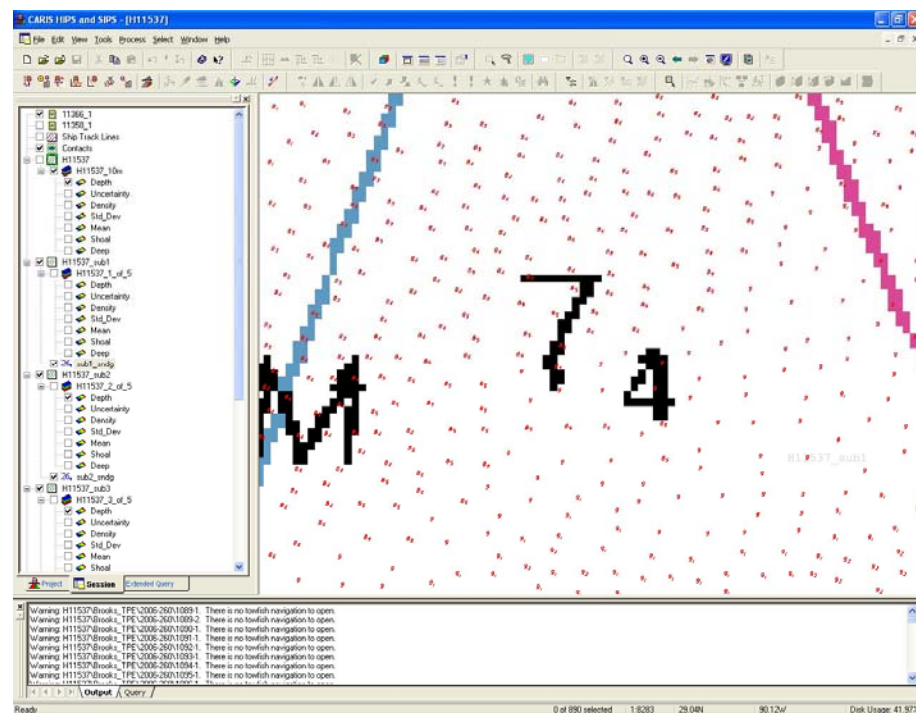
Survey soundings are deeper than charted soundings. The largest discrepancies are found in the Northwest corner of the survey. Charted depths in this area are between 34 and 50 feet. Survey depths are between 40 and 55 feet. The following image displays a typical example of this discrepancy. The discrepancy between survey and charted soundings decreases as the depth increases. Survey and charted soundings generally agree where both charted and survey depths are 80 feet or greater. **Concur**





### 11366

There are only thirteen charted soundings within the survey bounds on chart 11366. Each of these soundings was compared to the current survey depths. In general, this chart showed the same trend as chart 11358. Charte soundings were approximately 1 fathom shoaler than survey soundings in the shallower northwestern corner of the survey area. In deeper water (15 fathoms or more), charted soundings and survey depths agreed. *Concur*



### 11340

There are only sixteen charted soundings within the survey bounds on chart 11340. Each of these soundings was compared to the current survey depths. In general, this chart showed the same trend as chart 11358 and 11366. Charte soundings were approximately 1 fathom shoaler than survey soundings in the shallower northwestern corner of the survey area. In deeper water (15 fathoms or more), charted soundings and survey depths agreed. *Concur*





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### D.1.3 SHOALS AND HAZARDOUS FEATURES

Much of the oil and gas infrastructure within the survey area was severely damaged by Hurricanes Katrina and Rita less than one year prior to this survey. During survey operations, the Brooks McCall passed directly over “Grand Isle 140 B”, a rig that was know to have been toppled by the storm. Although this platform may have been salvaged since the time of survey operations, a shoal sounding of 47 feet has been marked as designated within the Caris project submitted in conjunction with this report. It is recommended that a 47-foot dangerous obstruction be charted at ~~28.9721822°N~~, **28 58'19.85"N** ~~90.0366675°W~~, **90 02'12.00"W** (WGS84). *Concur*

*Add 47 Obstn and danger curve.*

The following screen shot displays this designated sounding.

Least Depth: 47.234ft

Multibeam Line: 4034-1

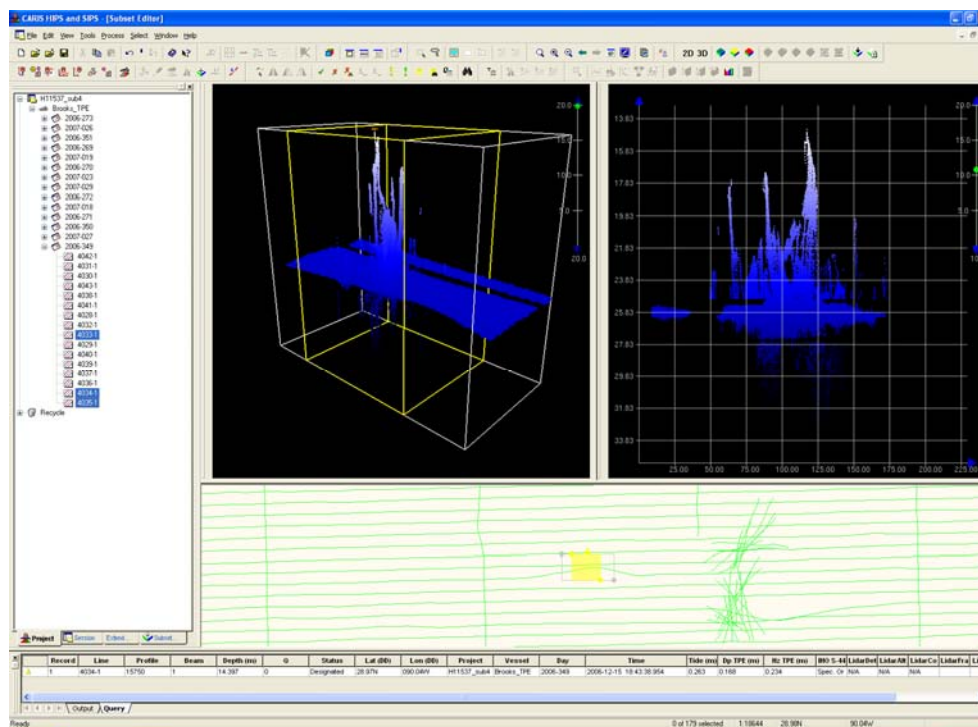
Position: ~~28.9721822°N, 90.0366675°W~~ (WGS84)

**28 58'19.85"N, 90 02'12.00"W**

Time Stamp: 2006-12-15 18:43:38



## Descriptive Report to Accompany Hydrographic Survey H11537







#### D.1.4 AWOIS ITEMS

##### FULL INVESTIGATIONS

The following eight AWOIS Items were assigned for full investigation. All of the following charted positions were taken from the LATDEC, LONGDEC column of the AWOIS database.

##### Item 13376

Description: Obstruction

Charted Position: ~~28.9816666667°~~N, ~~90.0211111111°~~W  
***28°58'54.00"N, 90°01'15.99"W***

Search Radius: 200 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: This item is listed as an obstruction. No evidence of this obstruction was found during the survey. It is recommended that this feature be removed from the chart, and the chart be updated with the current survey.  
***Concur Item not shown on chart 11346, 1<sup>st</sup>, Ed., Aug./04. No change in charting recommended.***





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Item 13382

Description: Obstruction

Charted Position: ~~28.9711111111° N, 90.0355555556° W~~

***28 58'16.00"N, 90 02'08.00"W***

Search Radius: 400 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: This item is listed as an obstruction. No evidence of this obstruction was found during the survey. It is recommended that this feature be removed from the chart, and the chart be updated with the current survey.

***Concur Delete charted Obstn, PA.***

Item 13384

Description: Obstruction

Charted Position: ~~28.9688888889° N, 90.0208333333° W~~

***28 58'08.00"N, 90 01'14.99"W***

Search Radius: 400 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: This item is listed as an obstruction. A significant contact was identified within the search radius of this item. This contact is discussed in section D.1.5 of this report as contact 4contact6. This obstruction appears to be oil filed debris. It is recommended that this contact be charted as a 75-foot submerged obstruction at ~~28.9694873° N, 90.0239599° W~~ (WGS84). ***28 58'10.15"N, 90 01'26.26"W*** This position was taken from multibeam line 4contact06-08. ***See item 4contact6 of this report for final charting recommendation. Delete charted Obstn PA.***





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Item 13385

Description: Obstruction

Charted Position: ~~28.9602777778° N, 90.0236111111° W~~

***28°57'37.00"N, 90°01'25.00"W***

Search Radius: 400 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: This item is listed as an obstruction. No evidence of this obstruction was found during the survey. It is recommended that this feature be removed from the chart, and the chart be updated with the current survey.

***Concur Delete charted Obstrn PA.***

Item 13453

Description: Obstruction

Charted Position: ~~29.05° N, 90° W~~ ***29°03'00.00"N, 90°00'00.00"W***

Search Radius: 900 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: This obstruction is listed as a submerged object lying six feet beneath the surface. This obstruction was first reported in LNM 11/81. No evidence of this obstruction was found during the survey. It is recommended that this feature be removed from the chart, and the chart be updated with the current survey. ***Concur***

***Delete charted Obstrn PA (6 ft rep 1981).***





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Item 13454

Description: Obstruction

Charted Position: ~~28.9428333333° N, 90.0328333333° W~~

***28 56'34.20"N, 90 01'58.20"W***

Search Radius: 200 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: This item was listed a helicopter in LNM 2/85. No evidence of this helicopter was found during the survey. It is recommended that this feature be removed from the chart, and the chart be updated with the current survey. ***Concur Delete charted Obstrn PA.***

Item 13456

Description: Unknown

Charted Position: ~~28.9408333333° N, 90.1136111111° W~~

***28 56'27.00"N, 90 06'49.00"W***

Search Radius: 400 meters

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: This unknown item was listed as a dangerous wreck of a jack up rig LNM 26/98. No evidence of this wreck was found during the survey. It is recommended that this feature be removed from the chart, and the chart be updated with the current survey. ***Concur***

***Delete charted dangerous sunken wreck PA.***





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Item 13457

Description: Obstruction

Charted Position: ~~29.03° N, 89.9988333333° W~~

***29°01'48.00"N, 89°59'55.80"W***

Search Radius: 200

Investigation Method: 200% Side Scan Sonar, Multibeam Echosounder

Position Determined By: Differential GPS

Investigation Summary: This obstruction was listed as a submerged trawl nets and rigging LNM 34/01. No evidence of this obstruction was found during the survey. It is recommended that this feature be removed from the chart, and the chart be updated with the current survey. ***Concur***

***Delete charted Obstn PA.***

#### D.1.5 INVESTIGATION ITEMS

Additional investigation work was performed for forty-four significant sonar contacts. A set of two to six additional multibeam and side scan lines were run over each of these targets. After investigation, the following twelve items were determined to be significant to navigation, and have been recommended for charting.





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1contact2

Least Depth: 43.504ft

Multibeam Line: 1Contact02-02

Position: ~~29.0167507° N, 90.116499° W~~ (WGS84)

***29 01'00.26"N, 90 06'59.39"W***

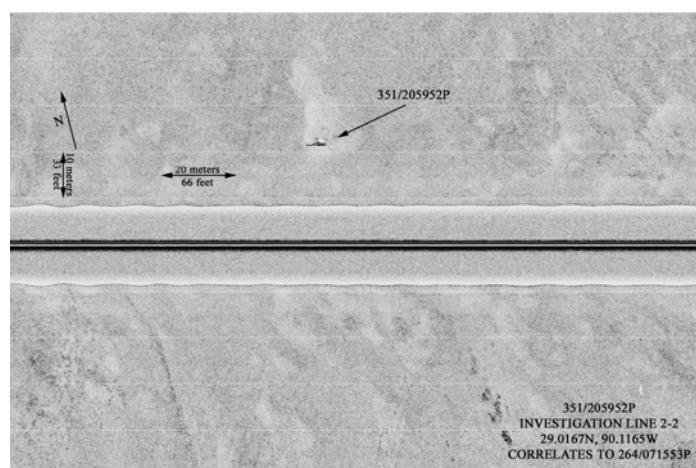
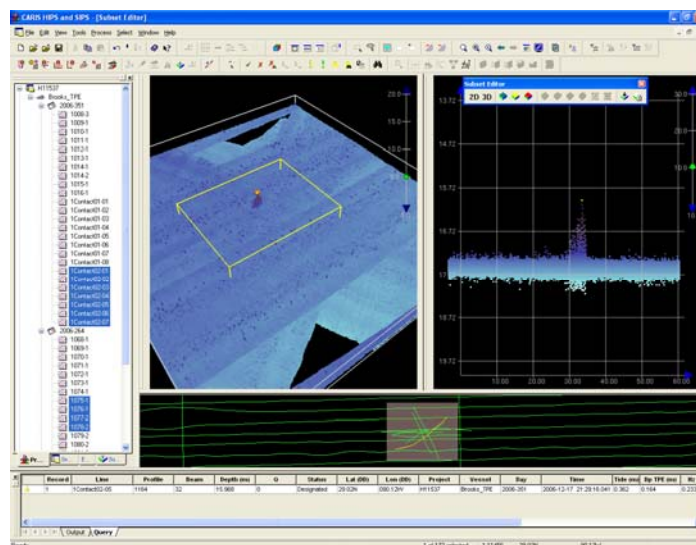
Time Stamp: 2006-12-17 21:01:36

Hydrographer's recommendations: This contact has been marked as a designated sounding within the H11537 Caris project submitted in conjunction with this report. It is recommended that this contact be charted as a 43-foot submerged obstruction at ~~29.0167507° N, 90.116499° W~~ ***29 01'00.26"N, 90 06'59.39"W*** (WGS84). This position was taken from multibeam line 1Contact02-02. ***Concur During office processing the obstruction was reevaluated and a new depth was determined. It is recommended that an obstruction with a depth of 51.90 feet be charted in Lat 29 01'00.26"N, Lon 90 06'59.39"W.***

***Chart 52 Obstn and danger curve.***



# Descriptive Report to Accompany Hydrographic Survey H11537







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1contact3

Least Depth: 50.338ft

Multibeam Line: 1contact03-06

Position: ~~29.0189504° N, 90.1484902° W~~ (WGS84)

***29 01'08.22"N, 90 08'54.56"W***

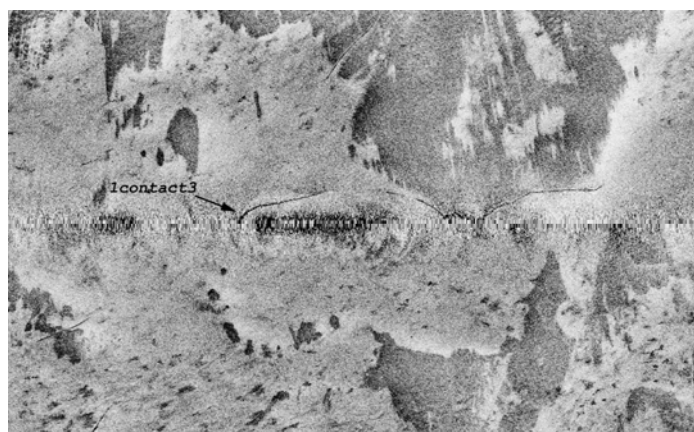
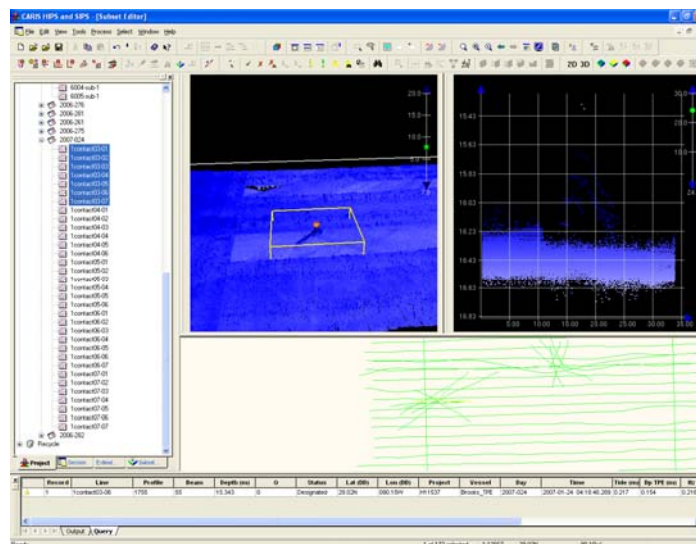
Time Stamp: 2007-01-24 04:18:46

Hydrographer's recommendations: This contact has been marked as a designated sounding within the H11537 Caris project submitted in conjunction with this report. This contact appears to be a spanning pipeline. It is recommended that this contact be charted as a 50-foot submerged obstruction at ~~29.0189504° N,~~ ***29 01'08.22"N, 90.1484902° W 90 08'54.56"W*** (WGS84). This position was taken from multibeam line 1contact03-06. ***Do not concur***

***During office processing the items was determined to be insignificant. Do not chart.***



# Descriptive Report to Accompany Hydrographic Survey H11537







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1contact4

Least Depth: 44.062ft

Multibeam Line: 1contact04-06

Position: ~~29.0215732° N, 90.139935° W~~ (WGS84)

***29 01'17.66"N, 90 08'23.76"W***

Time Stamp: 2007-01-24 03:10:06

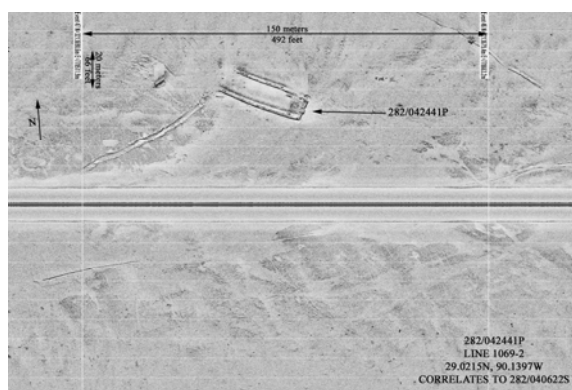
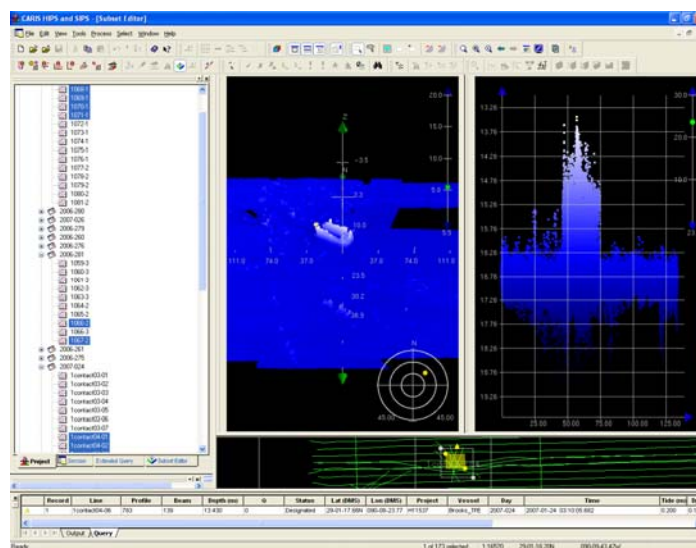
Hydrographer's recommendations: This contact has been marked as a designated sounding within the H11537 Caris project submitted in conjunction with this report. This sunken barge was added to the chart as an Obstn PA in LNM 39/06. It is recommended that this contact be charted as a 44-foot submerged wreck at ~~29.0215732° N, 90.139935° W~~ ***29 01'17.66"N, 90 08'23.76"W*** (WGS84). This position was taken from multibeam line 1contact04-06. ***Concur***

***Chart 44Wk and danger curve.***

***Delete charted Obstn PA in Lat 29 01'17.88"N, Lon 90 08'22.04"W .***



# Descriptive Report to Accompany Hydrographic Survey H11537







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1contact5

Least Depth: 39.816ft

Multibeam Line: 1contact05-02

Position: 29.030048° N, 90.1446049° W (WGS84)

**29 01'48.17"N, 90 08'40.57."W**

Time Stamp: 2007-01-24 04:54:01

Hydrographer's recommendations: This contact has been marked as a designated sounding within the H11537 Caris project submitted in conjunction with this report. This obstruction appears to be oil field debris. It is recommended that this contact be charted as a 40-foot submerged obstruction at 29.030048°N,

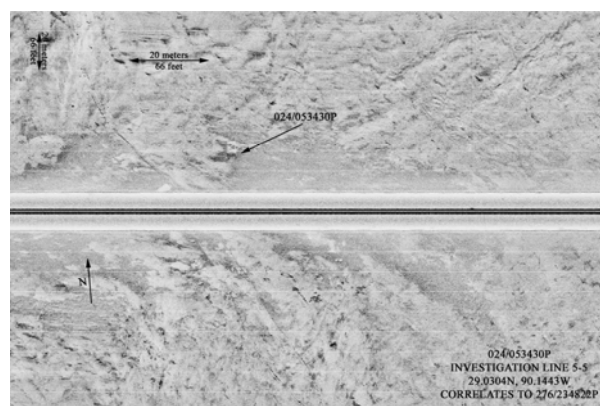
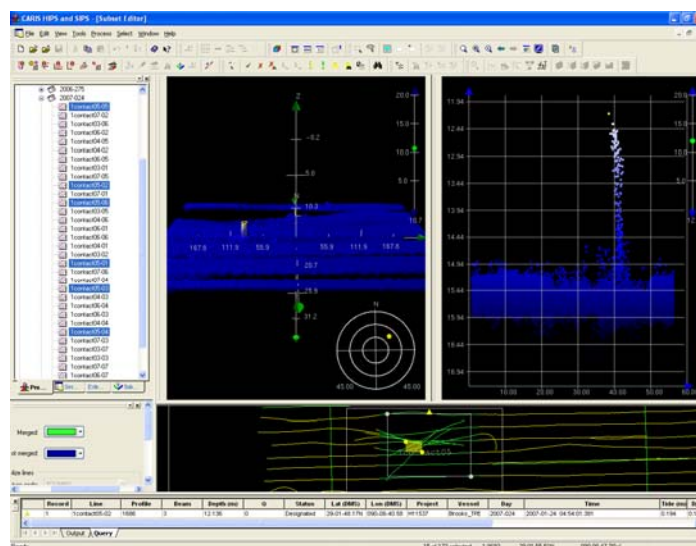
**29 01'48.17"N, 90.1446049° W 90 08'40.57"W** (WGS84). This position was taken from multibeam line 1contact05-02. **Concur with clarification**

***During office processing the obstruction was reevaluated and a new location and depth were determined. It is recommended that an obstruction with a depth of 45.59 feet be charted in Lat 29 01'48.21"N, Lon 90 08'41.14"W.***

***Chart 45 Obstn and danger curve.***



# Descriptive Report to Accompany Hydrographic Survey H11537







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2contact1

Least Depth: 70.295ft

Multibeam Line: 2contact01-05

Position: ~~29.0343190° N, 89.9969835° W~~ (WGS84)

***29 02'03.55"N, 89 59'49.14"W***

Time Stamp: 2007-01-19 04:03:57

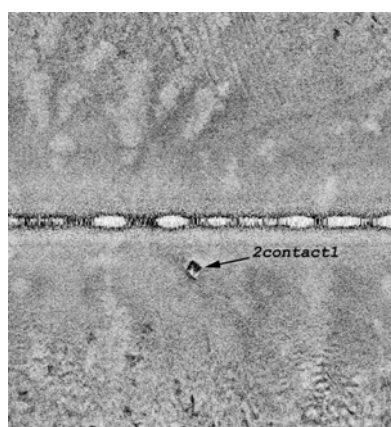
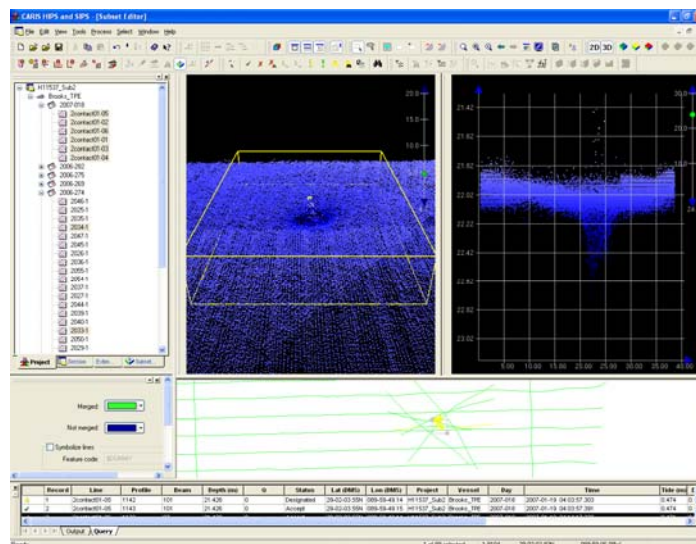
Hydrographer's recommendations: This contact has been marked as a designated sounding within the H11537 Caris project submitted in conjunction with this report. This obstruction appears to be oil field debris. It is recommended that this contact be charted as a 70-foot submerged obstruction at ~~29.0343190° N,~~

***29 02'03.55"N, 89.9969835° W 89 59'49.14"W*** (WGS84) This position was taken from multibeam line 2contact01-05. ***Concur***

***Chart 70 Obstn.***



# Descriptive Report to Accompany Hydrographic Survey H11537





## Descriptive Report to Accompany Hydrographic Survey H11537



---

### 3contact12

Least Depth: 76.673ft

Multibeam Line: 3044-1

Position: ~~28.9642945° N, 90.0769165° W~~ (WGS84)

***28 57'51.46"N, 90 04'36.90"W***

Time Stamp: 2006-09-15 18:15:06

Hydrographer's recommendations: This contact has been marked as a designated sounding within the H11537 Caris project submitted in conjunction with this report. This obstruction appears to be oil filed debris. It is recommended that this contact be charted as a 76-foot submerged obstruction at ~~28.9642945° N,~~

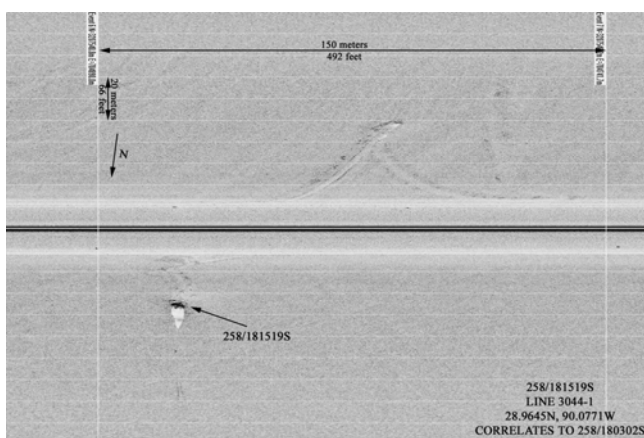
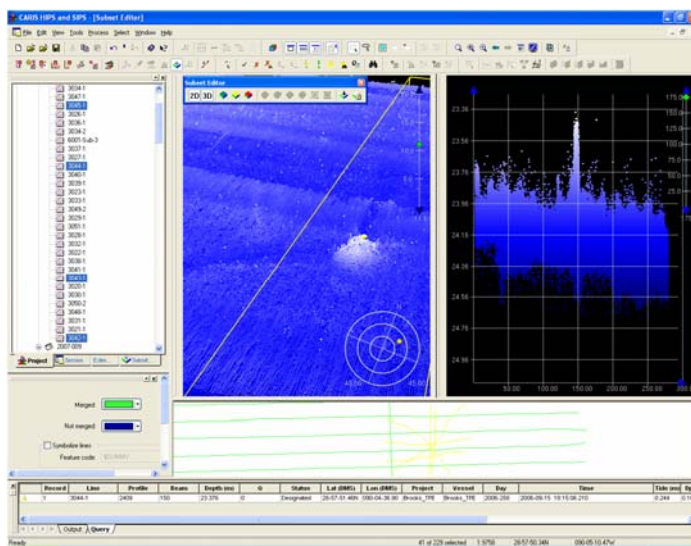
***28 57'51.46"N, 90.0769165° W*** (WGS84) ***90 04'36.90"W***. This position was taken from multibeam line 3044-1. ***Concur***

***Chart 76 Obstn.***

***Delete charted Obstn PA.***



# Descriptive Report to Accompany Hydrographic Survey H11537







---

3contact14

Least Depth: 68.965ft

Multibeam Line: 3Contact14-06

Position: ~~28.9485102° N, 90.1123632° W~~ (WGS84)

***28°56'54.63"N, 90°06'44.51"W***

Time Stamp: 2006-12-19 04:07:29

Hydrographer's recommendations: This contact has been marked as a designated sounding within the H11537 Caris project submitted in conjunction with this report. This obstruction appears to be oil field debris. It is recommended that this contact be charted as a submerged debris field with a least depth of 69-feet at ~~28.9485102° N, 90.1123632° W~~ ***28°56'54.63"N, 90°06'44.51"W*** (WGS84).

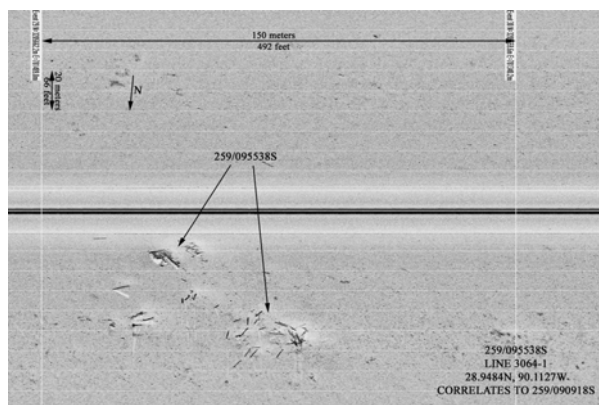
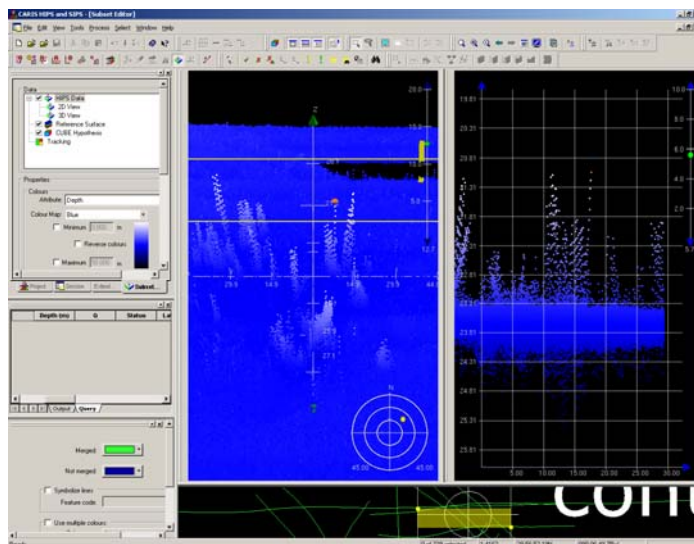
This position was taken from multibeam line 3Contact14-06. ***Concur***

***Chart 69 Obstn.***

***Delete charted Obstn PA.***



# Descriptive Report to Accompany Hydrographic Survey H11537







---

3contact19

Least Depth: 66.482ft

Multibeam Line: 3contact19-03

Position: ~~28.9580864° N, 90.1343995° W~~ (WGS84)

***28 57'29.11"N, 90 08'03.75"W***

Time Stamp: 2007-01-09 09:14:34

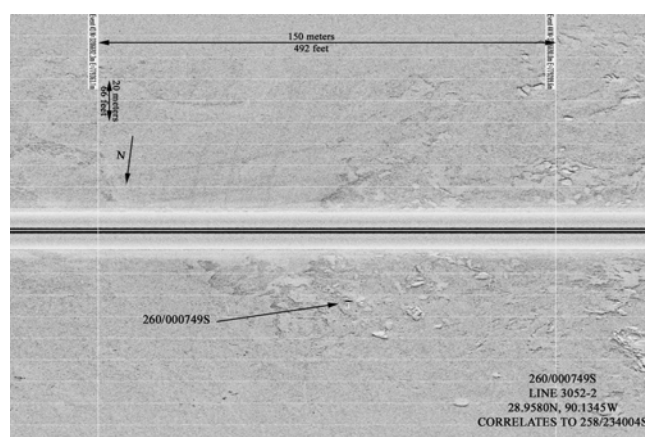
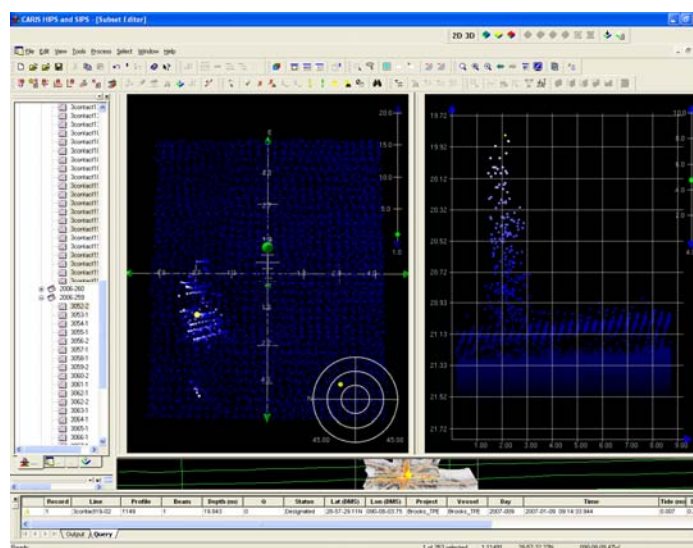
Hydrographer's recommendations: This contact has been marked as a designated sounding within the H11537 Caris project submitted in conjunction with this report. This obstruction appears to be oil field debris. It is recommended that this contact be charted as a 66-foot submerged obstruction at ~~28.9580864° N,~~

***28 57'29.11"N, 90.1343995° W 90 08'03.75"W*** (WGS84). This position was taken from multibeam line 3contact19-03. ***Concur***

***Chart 66 Obstn.***



# Descriptive Report to Accompany Hydrographic Survey H11537







---

4contact2

Least Depth: 86.132ft

Multibeam Line: 4contact02-08

Position: ~~28.9477971° N, 90.0368108° W~~ (WGS84)

***28 56'52.07"N, 90 02'12.52"W***

Time Stamp: 2007-01-19 10:22:24

Hydrographer's recommendations: This contact has been marked as a designated sounding within the H11537 Caris project submitted in conjunction with this report. This obstruction appears to be oil filed debris. It is recommended that this contact be charted as an 86-foot submerged obstruction at ~~28.9477971° N,~~

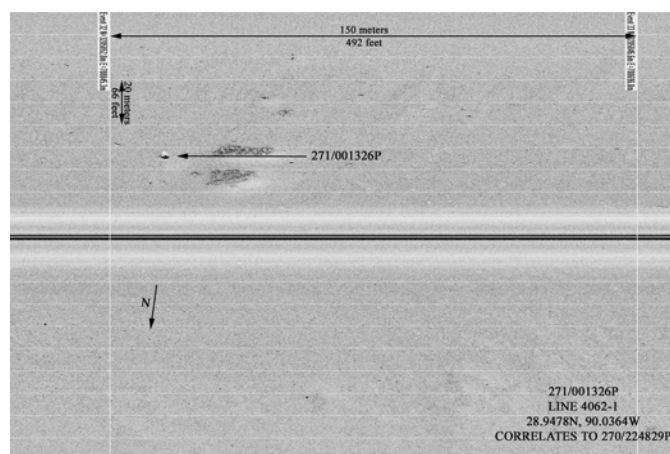
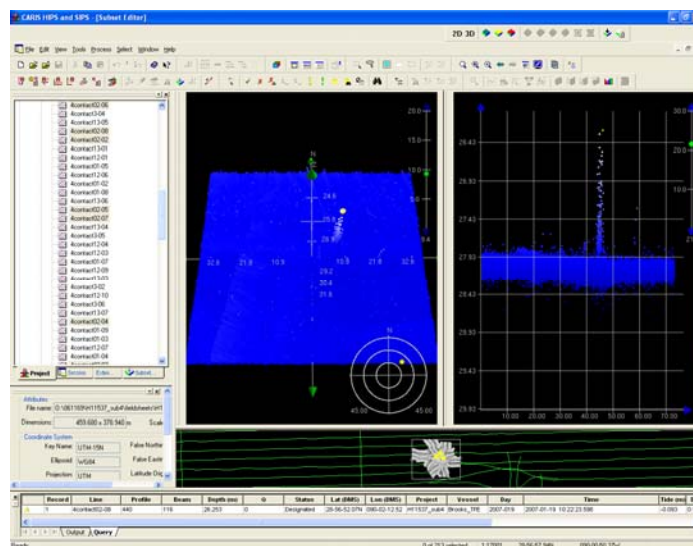
***28 56'55.10"N***~~90.0368108° W~~ ***90 06'45.80"W*** (WGS84) This position was

taken from multibeam line 4contact02-08. ***Concur***

***Chart 86 Obstn.***



# Descriptive Report to Accompany Hydrographic Survey H11537







---

4contact6

Least Depth: 75.558ft

Multibeam Line: 4contact06-08

Position: ~~28.9694873° N, 90.0239599° W~~ **28 58'10.15"N, 90 01'26.26"W**

Time Stamp: 2007-01-23 23:55:22

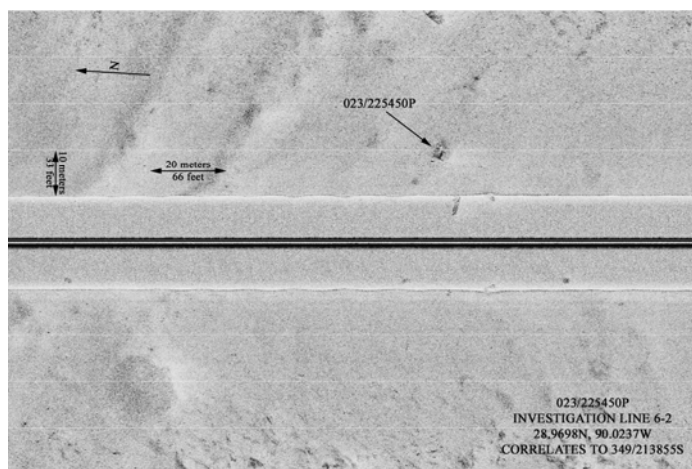
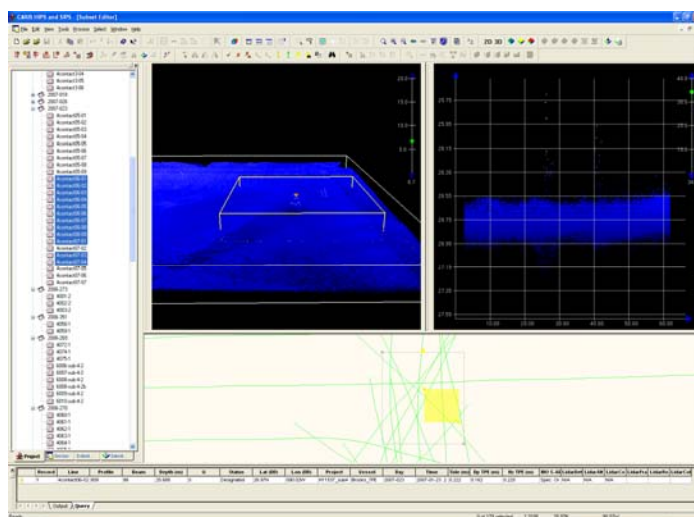
Hydrographer's recommendations: This contact has been marked as a designated sounding within the H11537 Caris project submitted in conjunction with this report. This obstruction appears to be oil filed debris. It is recommended that this contact be charted as a 75-foot submerged obstruction at ~~28.9694873° N,~~ **28 58'10.15"N, 90.0239599° W (WGS84). **90 01'26.26"W**. This position was taken from multibeam line 4contact06-08. **Do not concur****

***During office processing the item was determined insignificant. It is recommended that the 75 Obstn not be charted.***

***Chart present survey depths.***



# Descriptive Report to Accompany Hydrographic Survey H11537





## Descriptive Report to Accompany Hydrographic Survey H11537



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### 4contact12

Least Depth: 78.901ft

Multibeam Line: 4contact12-04

Position: ~~28.9653810° N, 90.0330479° W~~ (WGS84)

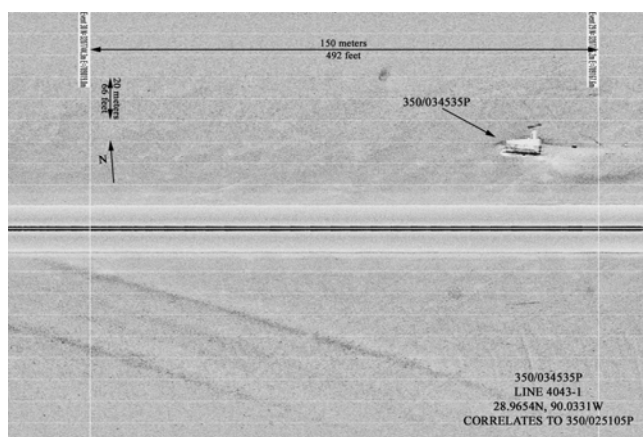
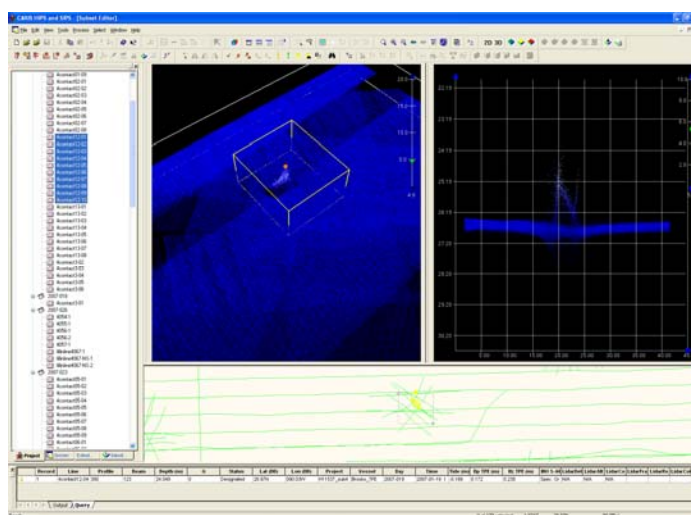
***28 57'55.37"N, 90 01'58.97"W***

Time Stamp: 2007-01-19 12:45:43

Hydrographer's recommendations: This contact has been marked as a designated sounding within the H11537 Caris project submitted in conjunction with this report. This obstruction appears to be the remains of a barge. It is recommended that this contact be charted as a 79-foot submerged wreck at ~~28.9653810° N~~, ***28 57'55.37"N, 90.0330479° W 90 01'58.97"W*** (WGS84). This position was taken from multibeam line 4contact12-04. ***Concur Chart 79 Wk.***



# Descriptive Report to Accompany Hydrographic Survey H11537







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5contact33

Least Depth: 80.062ft

Multibeam Line: 5contact33-06

Position: ~~28.9340939° N, 90.095891° W~~ (WGS84) **28°56'02.74"N,**

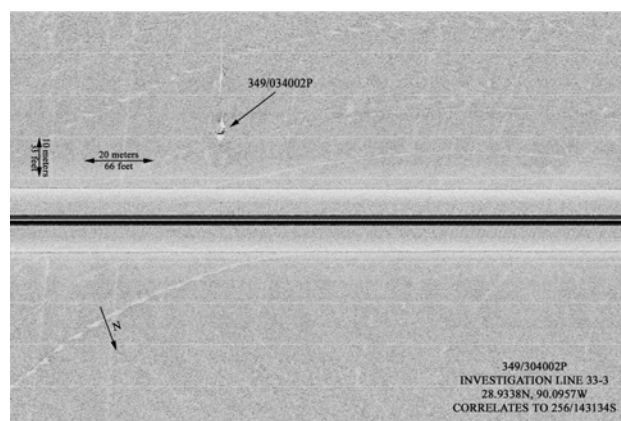
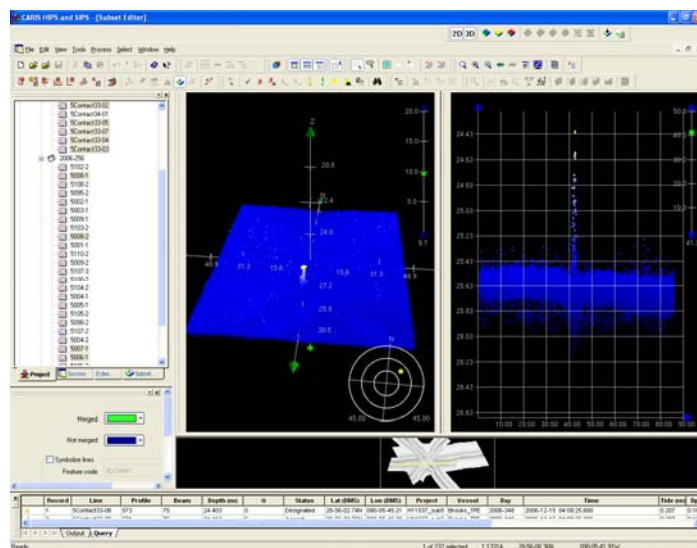
**90°05'45.21"W**

Time Stamp: 2006-12-15 04:09:26

Hydrographer's recommendations: This contact has been marked as a designated sounding within the H11537 Caris project submitted in conjunction with this report. This obstruction appears to be oil field debris. It is recommended that this contact be charted as an 80-foot submerged obstruction at ~~28.9340939° N,~~ **28°56'55.10"N,** ~~90.095891° W~~ **90°06'45.80"W** (WGS84). This position was taken from multibeam line 5contact33-06. **Concur** **Chart 80 Obstn.**



# Descriptive Report to Accompany Hydrographic Survey H11537







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#### D.1.6 DANGER TO NAVIGATION REPORTS

No Danger to Navigation Reports were issued. *Concur*

#### D.2 ADDITIONAL RESULTS

##### D.2.1 PRIOR SURVEYS *See also Evaluation Report.*

Comparison with prior surveys was not required under this Task Order. See Section D.1 for comparison to nautical charts.

##### D.2.2 AIDS TO NAVIGATION

There are no aids to navigation within the survey area. *Concur*



## D.2.3 EXISTING INFRASTRUCTURE

The following charted platforms were found as charted. *Concur*

Survey Position	
Latitude	Longitude
29.0561268°N <i>29 03'22.06"N</i>	90.1160608°W <i>90 06'57.82"W</i>
29.0434778°N <i>29 02'36.52"N</i>	90.1205307°W <i>90 07'13.91"W</i>
29.0409948°N <i>29 02'27.58"N</i>	90.1249837°W <i>90 07'29.94"W</i>
29.0380101°N <i>29 02'16.83"N</i>	90.1100650°W <i>90 06'36.23"W</i>
29.0371939°N <i>29 02'13.90"N</i>	90.1284293°W <i>90 07'42.34"W</i>
29.0381586°N <i>29 02'17.37"N</i>	90.1334560°W <i>90 08'00.44"W</i>
29.0355026°N <i>29 02'07.81"N</i>	90.1257695°W <i>90 07'32.77"W</i>
29.0351679°N <i>29 02'06.60"N</i>	90.1383223°W <i>90 08'17.96"W</i>
29.0340680°N <i>29 02'02.64"N</i>	90.1220797°W <i>90 07'19.49"W</i>
29.0316502°N <i>29 01'53.94"N</i>	90.1444272°W <i>90 08'39.94"W</i>
29.0295878°N <i>29 01'46.52"N</i>	90.1344000°W <i>90 08'03.94"W</i>
29.0276913°N <i>29 01'39.69"N</i>	90.1202485°W <i>90 07'12.89"W</i>
29.0266175°N <i>29 01'35.82"N</i>	90.1349477°W <i>90 08'05.81"W</i>
*29.0260513°N <i>29 01'33.78"N</i>	90.1419341°W <i>90 08'30.96"W</i>
29.0219810°N <i>29 01'19.13"N</i>	90.1375917°W <i>90 08'15.33"W</i>
29.0205086°N <i>29 01'13.83"N</i>	90.1091590°W <i>90 06'32.97"W</i>
29.0176957°N <i>29 01'03.71"N</i>	90.1329128°W <i>90 07'58.48"W</i>
29.0126592°N <i>29 00'45.57"N</i>	90.1478191°W <i>90 08'52.15"W</i>
29.0095972°N <i>29 00'34.55"N</i>	90.1467034°W <i>90 08'48.13"W</i>
29.0057150°N <i>29 00'20.57"N</i>	90.0731790°W <i>90 04'23.44"W</i>
28.9488257°N <i>28 56'55.77"N</i>	90.0832876°W <i>90 04'59.83"W</i>
28.9914135°N <i>28 59'29.09"N</i>	90.0124503°W <i>90 00'44.82"W</i>
28.9701342°N <i>28 58'12.48"N</i>	90.0000458°W <i>90 00'00.16"W</i>
28.9453239°N <i>28 56'43.17"N</i>	90.0536120°W <i>90 03'13.00"W</i>
28.9458919°N <i>28 56'45.21"N</i>	90.0335869°W <i>90 02'00.91"W</i>
28.9459557°N <i>28 56'45.44"N</i>	90.0309822°W <i>90 01'51.53"W</i>
**28.9458255°N <i>28 56'44.97"N</i>	90.0311381°W <i>90 01'52.09"W</i>
**28.9461466°N <i>28 56'46.13"N</i>	90.0308475°W <i>90 01'51.05"W</i>
28.9453658°N <i>28 56'43.32"N</i>	90.0308388°W <i>90 01'51.02"W</i>

\* See the Evaluation Report for final charting recommendation.

\*\* Do not chart. Scale of chart does not allow for these two platforms to charted in this area.



# Descriptive Report to Accompany Hydrographic Survey H11537



An error in the position of the following charted platforms was found. The following table displays the currently charted position, as well as the correct position as determined by this survey. *Concur with clarification*

Charted Position		Survey Position	
Latitude	Longitude	Latitude	Longitude
*29.0507194°N <i>29 03'02.59"N</i>	90.1288820°W <i>90 07'43.97"W</i>	29.0500932°N <i>29 03'00.33"N</i>	90.1284062°W <i>90 07'42.26"W</i>
*29.0307715°N <i>29 01'50.78"N</i>	90.1443418°W <i>90 08'39.63"W</i>	29.0313327°N <i>29 01'52.80"N</i>	90.1449328°W <i>90 08'41.76"W</i>
**29.0261085°N <i>29 01'33.99"N</i>	90.1420003°W <i>90 08'31.20"W</i>	29.0265314°N <i>29 01'35.51"N</i>	90.1424818°W <i>90 08'32.93"W</i>
*28.9698049°N <i>28 58'11.30"N</i>	90.0206001°W <i>90 01'14.16"W</i>	28.9686325°N <i>28 58'07.08"N</i>	90.0217127°W <i>90 01'18.17"W</i>

*\*It is recommended that the charted platforms be deleted. It is also recommended that new platforms be charted in above survey positions.*

*\*\* See the Evaluation Report for final charting recommendation.*

Platforms found in the following locations are currently uncharted. *Concur*

Survey Position	
Latitude	Longitude
29.0380998°N <i>29 02'17.16"N</i>	90.1109962°W <i>90 06'39.59"W</i>
29.0254768°N <i>29 01'31.72"N</i>	90.1374907°W <i>90 08'14.97"W</i>

The following is a list of platforms that are currently charted, but were no longer present at the time of the survey. *Concur*

Charted Position	
Latitude	Longitude
28.9611564°N <i>28 57'40.16"N</i>	90.0435260°W <i>90 02'36.69"W</i>
28.9718275°N <i>28 58'18.58"N</i>	90.0363647°W <i>90 02'10.91"W</i>
28.9607187°N <i>28 57'38.59"N</i>	90.0236892°W <i>90 01'25.28"W</i>
28.9434226°N <i>28 56'36.32"N</i>	90.0116279°W <i>90 00'41.86"W</i>
29.0138903°N <i>29 00'50.00"N</i>	90.1250231°W <i>90 07'30.08"W</i>
29.0165882°N <i>29 00'36.59"N</i>	90.1430700°W <i>90 08'35.05"W</i>
29.0215541°N <i>29 01'17.59"N</i>	90.1045254°W <i>90 06'16.29"W</i>
29.0282834°N <i>29 01'41.82"N</i>	90.1198060°W <i>90 07'11.30"W</i>
29.0538553°N <i>29 03'13.88"N</i>	90.1077097°W <i>90 06'27.75"W</i>
29.0469535°N <i>29 02'49.03"N</i>	90.1338416°W <i>90 08'01.83"W</i>





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#### D.2.4 OTHER PERTINENT INFORMATION

Several tide zone files were created by CO-OPS to be used for tidal correction of multibeam data collected for this survey. The initial tidal zone files did not cover the extents of the survey area. The final and correct file was named K362KR2006CORP\_Rev2.zdf, and is included in the Caris project submitted in conjunction with this report.

Five separate BASE surfaces were created for this project, one for each subarea. All five BASE surfaces were created at 5-meter resolution, according to IHO Special Order standards. *Concur*

All of the side scan data collected for this project has been layback corrected. Data should be imported into Caris using fish position and zero layback correction.

Side scan data submitted in the fill in folders in subareas 1 and 4 was collected in the immediate vicinity of oil and gas infrastructure. It was not possible to run an established line plan in these areas due to the existence of numerous platforms.

S57 feature files have been submitted in a Caris Notebook project. This project is named Sheet B Notebook.

This project is the first that C&C Technologies has ever submitted with a BASE surface as the final bathymetric product.





## **APPENDIX I**

### **DANGER TO NAVIGATION REPORTS**





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No Danger to Navigation Reports were issued.



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## **APPENDIX II**

### **LIST OF GEOGRAPHIC NAMES**





No new geographic names were found within the survey area. No corrections to the currently charted geographic names within the survey area are needed.

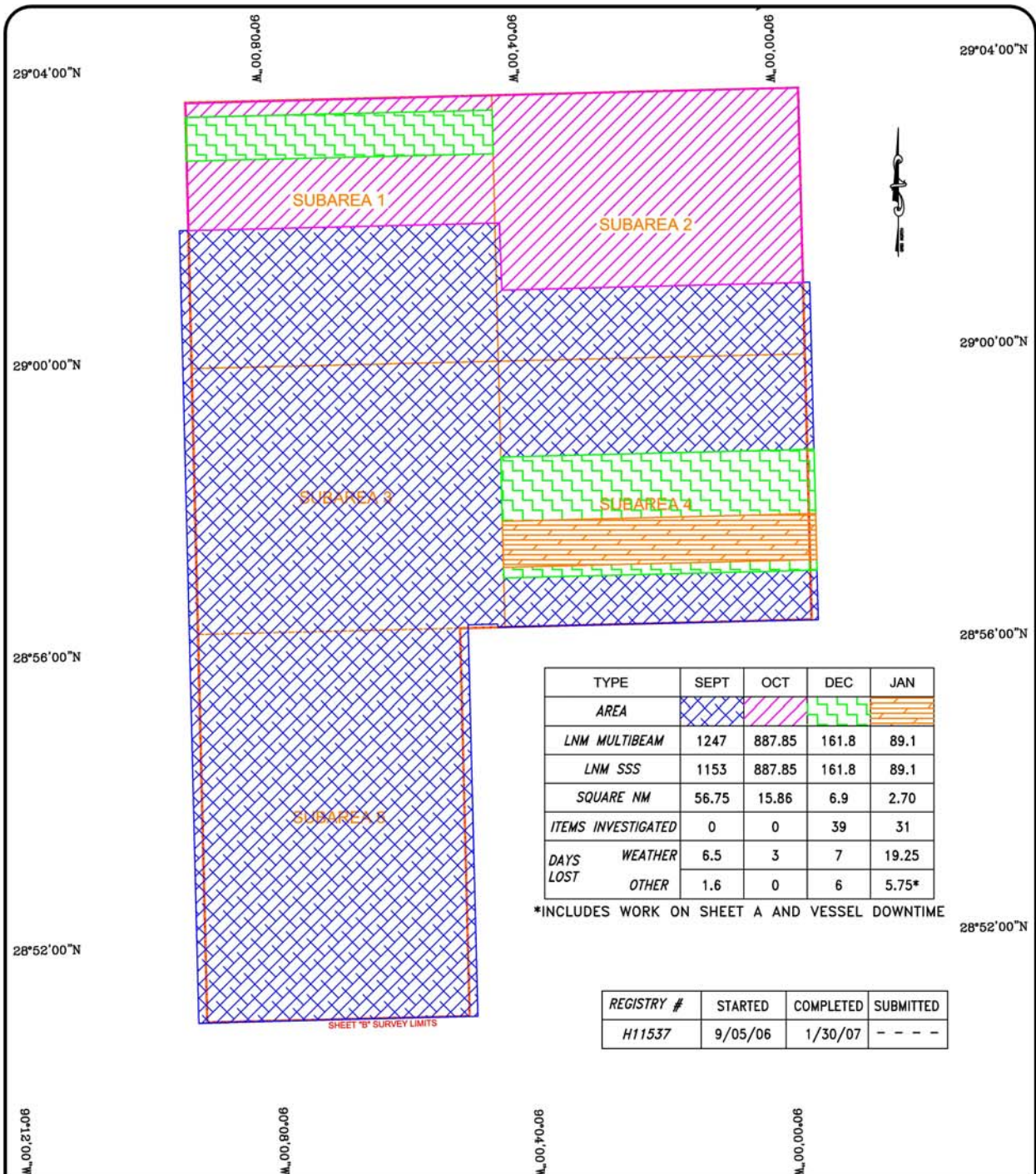


## **APPENDIX III**

### **PROGRESS SKETCH**



# Descriptive Report to Accompany Hydrographic Survey H11537



National Oceanic and Atmospheric Administration  
 U.S. DEPARTMENT OF COMMERCE

OPR-K362-KR-06  
 REG: H11537  
 Port Fourchon, Gulf of Mexico

DATE: 02/15/2007 TIME: 10:00 FILENAME: J:\NOAA\PORTFOURCHON\_(0000-8166)\SHEET-B\_(1169)\PROG1169.DWG

PREPARED BY: C&C Technologies  
 SURVEY SERVICES  
 730 E. KAULSTE SALDOM ROAD, LAFAYETTE, LA (337) 281-0880

JOB No: 061169-061170  
 FILENAME: PROG1169.DWG

REVISED:  
 DEC. 7, 2006  
 FEB. 15, 2007

DATE: SEPT., 2006

SHEET 1 OF 1



## **APPENDIX IV**

### **TIDES AND WATER LEVELS**





The tidal data applied to all single beam echosounder data was downloaded from the following website:

[http://www.tidesandcurrents.noaa.gov/olddata/data\\_retrieve.shtml?input\\_code=100111111vwl](http://www.tidesandcurrents.noaa.gov/olddata/data_retrieve.shtml?input_code=100111111vwl)





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**APPENDIX V**

**SUPPLEMENTAL SURVEY RECORDS  
AND CORRESPONDANCE**





There are no supplemental survey records or correspondence accompanying this report.



## **APPENDIX V**

### **AWOIS**





Eight AWOIS Items were assigned for full investigation. They are discussed in section D.1.4 of this report.



Descriptive Report to Accompany Hydrographic Survey H11537



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**LETTER OF APPROVAL**

REGISTRY NUMBER H11537

This report and the accompanying smooth sheet are respectfully submitted.

Field operations contributing to the accomplishment of the survey H11537 were conducted under my direct supervision with frequent personal checks of progress and adequacy. This report and CARIS project have been closely reviewed and are considered complete and adequate as per the Statement of Work.

This report is meant to be accompanied by the Data Acquisition and Processing Report for project OPR-K362-KR revised and submitted September 2007.

A handwritten signature in blue ink, appearing to read 'Joe Burke', written over a horizontal line.

Joseph Burke  
Chief of Party  
C&C Technologies  
September 2007



**ATLANTIC HYDROGRAPHIC BRANCH  
EVALUATION REPORT to Accompany  
Surveys H11537 (2006-2007)**

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

**B. DATA ACQUISITION AND PROCESSING**

**B.1 DATA PROCESSING**

The following software was used to process and review data at the Atlantic Hydrographic Branch (AHB):

CARIS HIPS/SIPS version 6.1  
CARIS BASE Manager 2.1  
CARIS HOM 3.3 SP3  
PYDRO, version 7.3  
Dkart Inspector V. 5.1

**B.2 QUALITY CONTROL**

**H-Cells**

The AHB source depth grid was generated as a 5m resolution combined BASE surface sourced from the 5 Base surfaces generated by C&C Technologies for survey H11537. All AHB generated surfaces H11537 were sourced from the field submitted surfaces. Survey scale soundings were extracted from AHB generated 5m combined BASE surface at a 1:40000 scale using a radius of 1.75m. Soundings were selected for charting by hand using the latest raster chart (11346) and smooth contours as background for sounding placement. Soundings were then checked for conflicts, corrected to remove conflicts, and edited to allow for proper sounding compilation placement with respect to existing charted depths outside the survey area. The BASE surface was referenced when selecting the chart scale soundings, to ensure that the selected soundings portrayed the bathymetry within the common area.

Depth curves were created from a BASE Editor shifted surface sourced from the 5m product surface using a single shift value of 0.229m. The curves were utilized during chart scale sounding selection at AHB.



## H11537

The compilation products and Stand Alone HOB Files (SAHOB) are detailed in the Compilation Process Log of this document. All individual SAHOB files were assembled in BASE Editor during H-Cell compilation.

The completed H-Cell was exported as a Base Cell File (ENC.000) in S-57 format with all values in metric units. The metric equivalent ENC.000 file was then converted to NOAA chart units (ENC\_CS.000) with all values measured in feet following NOAA sounding rounding rules.

The H11537 CARIS H-Cell final deliverables include the following products:

US411537_CS.000	1:40,000 Scale	H11537 Selected Soundings (Chart Scale)
US411537_SS.000	1:40,000 Scale	H11537 Selected Soundings (Survey Scale)
US411537_BlueNotes.000	1:40,000 Scale	H11537 Cartographic Notes

### Junctions

Survey H11537 (2007) junctions with surveys H11457 (2007) to the west. Present survey soundings compare well with the junctional survey. Present survey depths are in harmony with the charted Hydrography to the east, north, and south.

### **C. VERTICAL AND HORIZONTAL CONTROL**

Final vertical correction processing was completed by the field unit with no additional correction required by Atlantic Hydrographic Branch. The field unit applied verified water levels in conjunction with the preliminary tidal zoning which was accepted and approved by N/OPSI CO-OPS as the final zoning for H11537. Sounding datum is Mean Lower Low Water (MLLW). Vertical datum is Mean High Water (MHW).

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD83), UTM projection zone 15. Office ENC processing of this survey required translating the datum to meet S-57 ENC requirements. The horizontal geodetic datum was translated to Latitude and Longitude (LLDG) World Geodetic System-84 (WGS-84) during CARIS HOM processing.



**D. RESULTS AND RECOMMENDATIONS**

<b><u>Chart Comparison</u></b>	<b><u>11346 (1<sup>st</sup>. Edition, Aug. /04)</u></b> Corrected through NM Aug. 14/04 Corrected through LNM Jul. 27/04 1:40,000 Scale
	<b><u>11358 (54<sup>th</sup>.Edition, Feb. /07)</u></b> Corrected through NM Feb. 24/07 Corrected through LNM Feb. 27/07 1:80,000 Scale
	<b><u>11366 (11<sup>th</sup>.Edition, Jan. /08)</u></b> Corrected through NM Jan. 19/08 Corrected through LNM Jan. 8/08 1:250,000 Scale
<b><u>ENC Comparison</u></b>	<b><u>US5LA26M</u></b> Port Fourchon and Approaches Edition 8 Update Application Date 2008-06-09 Issue Date 2008-06-09 References: Charts 11346
<b><u>ENC Comparison</u></b>	<b><u>US4LA32M</u></b> Barataria Bay and Approaches Edition 17 Update Application Date 2008-03-27 Issue Date 2008-06-20 References: Charts 11358
<b><u>ENC Comparison</u></b>	<b><u>US3GC04M</u></b> Approaches TO Mississippi River Edition 10 Update Application Date 2008-04-03 Issue Date 2008-07-07 References: Charts 11366

**Hydrography**

The charted Hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in Section D. of the Descriptive Report.



**Charted/Uncharted Features**

1) Automated Wreck and Obstruction Information Item (AWOIS) #319, dangerous sunken wreck (36 ft rep), charted in Latitude 29°03'00"N, Longitude 90°09'00"W was not discussed in the Descriptive Report for this survey. A final charting recommendation for AWOIS #319 can be found in the Descriptive Report for H11457 (2006-07).

2) A charted dangerous sunken wreck, PA in the vicinity of Latitude 29°00'59"N, Longitude 90°08'50"W was disproved by the present surveys with 200% side scan sonar and multibeam investigation. It is recommended that the dangerous sunken wreck, PA be deleted.

3) A charted dangerous obstruction, PA in the vicinity of Latitude 29°00'21"N, Longitude 90°04'23"W was disproved by the present surveys with 200% side scan sonar and multibeam investigation. It is recommended that the dangerous obstruction, PA be deleted.

4) A charted platform in the vicinity of Latitude 29°01'33.78"N, Longitude 90°08'30.96"W was located in its correct location. During office processing the charted platform was determined to be discussed in two sections of the Descriptive Report. The platform was listed as being in a new location; however during review of the data and report it was determined that there are two platforms. It is recommended that the charted platform be retained in its present location. It is also recommended that a new platform be charted in Latitude 29°01'35.51"N, Longitude 90°08'32.93"W.

**Prior Surveys**

A comparison with prior surveys was not done during office processing in accordance with section 4. of the memorandum titled "Changes to Hydrographic Survey Processing", dated May 24, 1995.

**Adequacy of Survey**

The present survey is adequate to supersede the charted bathymetry within the common area. Any features not specifically addressed either in the H-Cell File or the Blue Notes should be retained as charted. Refer to the



Descriptive Report for further survey requirements  
recommended by the hydrographer.

**Miscellaneous**

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland. See Section D.1. of this report for a list of the Raster Charts and Electronic Navigation Charts (ENC) used for compiling the present survey.



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**Norris A. Wike**  
Cartographer  
Verification of Data  
Evaluation and Analysis Report



# H11537 COMPILATION PROCESS RECORD

Registry No.	H11537
Project No.	OPR-K362-KR-06
Field Unit	C&C Technologies
Compilers	Norris A Wike

## **11346 (1<sup>st</sup>. Edition, Aug./04)**

Corrected through NM Aug. 14/04

Corrected through LNM Aug.27/04

1:40,000 Scale

## **11358 (54<sup>th</sup>. Edition, Feb. /07)**

Corrected through NM Feb. 24/07

Corrected through LNM Feb. 27/07

1:80,000 Scale

## **11366 (11<sup>th</sup>. Edition, Jan. /08)**

Corrected through NM Jan. 19/08

Corrected through LNM Jan. 8/09

1:80,000 Scale

Largest Scale

Chart

## **US5LA26M**

Edition 8

Issue Date 2008-06-09

Update Application Date 2008-06-09

Chart 11346

## **US4LA32M**

Edition 17

Issue Date 2008-06-20

Update Application Date 2008-03-27

Chart 11358

## **US3GCO4M**

Edition 10

Issue Date 2008-04-03

Update Application Date 2008-07-07

Chart 11366

Survey Scale  
Date Of Survey

1:40000

September 26, 2006 – January 30, 2007



<b>Milestones</b>	<b>File Name</b>
<i>Product Surface Creation</i>	H11537_PS_5m.hns
<i>Shifted Surface</i>	H11537_PS_Shifted_5m.hns
<i>Contour Layer</i>	H11537_contours.hob
<i>Survey Scale Soundings</i>	H11537_SS.hob
<i>Chart Scale Soundings</i>	H11537_CS.hob
<i>Feature Layer</i>	H11537_Features.hob H11537_Depare.hob H11537_GS.hob
<i>Meta-objects Layer</i>	H11537_MCovr.hob H11537_MQual.hob
<i>Blue Notes</i>	H11537_BlueNotes.hob

META-OBJECTS:











M\_COVR attributes

Acronym	Value
CATCOV	1 - coverage available
SORDAT	20070130
SORIND	US,US,survey,H11537

M\_QUAL attributes

Acronym	Value
CATZOC	zone of confidence B
INFORM	H11537, OPR-K362-KR-06, C&C Technologies, MV Brooks McCall
TECSOU	Multibeam
SURSTA	20060626
SUREND	20070130
POSACC	10
SORDAT	20070130
SORIND	US,US,survey,H11537

Final Grids Listing –

	H11537_AHB_1_5M_Final.hns
	H11537_AHB_1_5M_Final.xml
	H11537_AHB_2_5M_Final.hns
	H11537_AHB_2_5M_Final.xml
	H11537_AHB_3_5M_Final.hns
	H11537_AHB_3_5M_Final.xml
	H11537_AHB_4_5M_Final.hns
	H11537_AHB_4_5M_Final.xml
	H11537_AHB_5_5M_Final.hns
	H11537_AHB_5_5M_Final.xml



**APPROVAL SHEET**  
**H11537**

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproof of charted data. All revisions and additions made to the H-Cell files during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

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Norris A. Wike  
Cartographer,  
Atlantic Hydrographic Branch

All final products have undergone a comprehensive review as per the Atlantic Hydrographic Branch Processing Manual and are verified to be accurate and complete except where noted in the Evaluation Report.

I have reviewed the Base Cell files, accompanying data, and reports. This survey and accompanying Marine Chart Division deliverables meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Approved:

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Lt. Commander Shepard M. Smith, NOAA  
Chief, Atlantic Hydrographic Branch